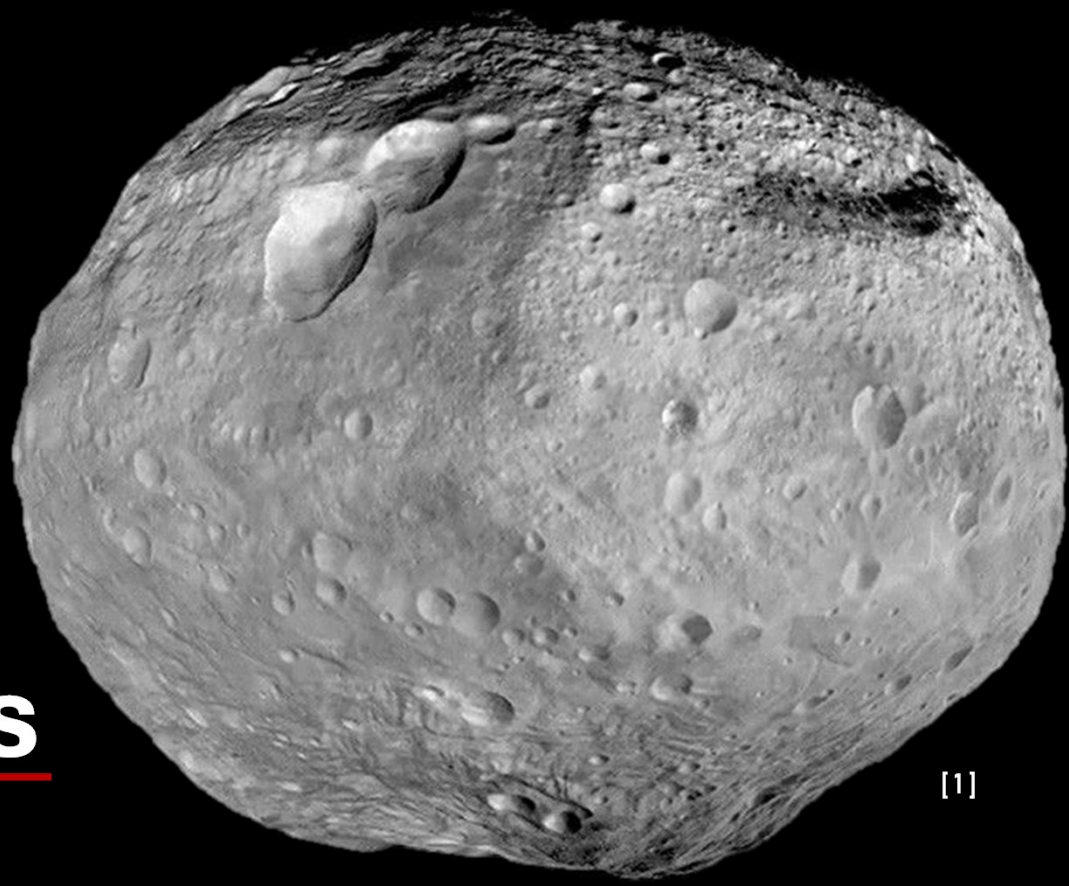
NASA INTERNATIONAL® SPACE APPS CHALLENGE



[1]

2025 NASA Space Apps Challenge

Meteor Madness

OCTOBER 04-05th, 2025

By Team SNOOPY'S PALS

SNOOPY'S PALS

TEAM AND ROLES

Left to right:

VLAD EMIL PETREA, *42 – IT Project Manager*
Team's Technology Coordinator

SAHIL SAMEER KUNJEER, *22 – MSc Aerospace Engineering Student*
Team's Data Analyst & Re-entry Model Designer

EMIR IBRAHIM ORCIN, *17 – Amateur Programmer*
Team's UI & Website Designer

FRANZ DE LA TORRE W., *29 – MSc Aerospace Engineering Student*
Team's General Coordinator and Graphic Designer

MIHA RATAJC, *28 – MSc Aerospace Engineering Student*
Team's Data Analyst & Website Designer

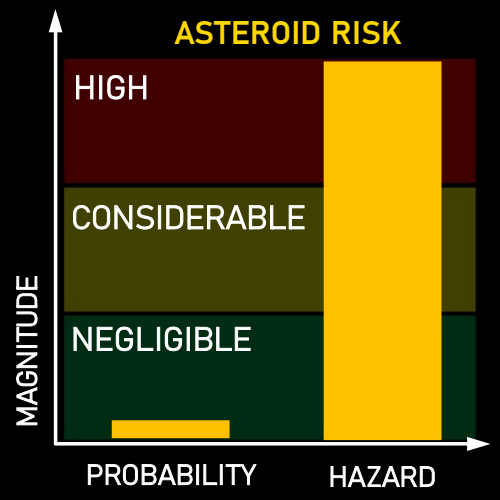
INTRO

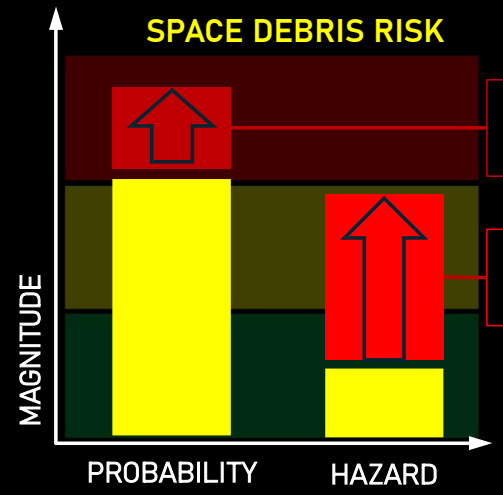
“No collision. no problem!”

For all human history so far, this laissez-faire attitude to objects entering the atmosphere has characterized humanity's space approach.

SPACE FACTS – ASTEROIDS & DEBRIS

HAZARDS, PROBABILITY, RISK (REPRESENTATIVE)





[3] and [4]

	Asteroid (over 140m to over 1km) [2]	Space debris (< 1 mm to > 10 m) [3]
Hazard range	Regional damage – Global Catastrophe	Minimal mech. hazard on surface – Environmental chem. hazard
Probability range	~1 in 10,000 yrs – ~1 in 500,000 yrs	Monthly: large objects (~1000 kg+) Daily: Small debris ~200–400 t/yr

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SPACE FACTS – ASTEROIDS & DEBRIS

Satellite Re-Entry: Atmospheric Pollution by Layer

[5]

Thermosphere/Ionosphere 85-600 km Breakup begins	Vaporized Metalls disrupt Ionosphere (-> SatCom and SatNav)
Mesosphere 50-85 km Main burn-up zone	Metals convert to oxide particles
Stratosphere 12-50 km Burn-up. Most Critical	• Al2O3 particles accumulate • Catalyzes ozone destruction • Alters heat absorption • Lasts for years
Troposphere 0-12 km Toxic chemicals are released	Air, water and soil get contaminated
Ground (Climate Systems) Rare debris impacts	Physical damage and health risks

NASA INTERNATIONAL® SPACE APPS CHALLENGE

OUR MISSION AND HOW WE WILL REACH IT

PART 1 of 2 – GOAL

MISSION

Raising global awareness of Asteroid and Space Debris risks (focusing on their environmental effect)

VISION

by creating a Platform that provides curated education, modern tools for environmental effects simulation and real-time tracking.

OUR MISSION AND HOW WE WILL REACH IT

PART 2 of 2 – OUR SOLUTION

Risk awareness

- Merging focus of asteroid and space debris – focusing on their environmental effect
- Create NEO risk consciousness
- Create a community for disaster response

Use of AI

- Web-page development
- Real-time asteroid-tracking and collision simulation tool creation
- Environmental effect simulation
- Processing of the NASA and USGS data

Power to the people

- Offering education and transparent information
- Bridging the gap between decision makers and the public

Link to Webpage: Space Overwatch - Asteroid Awareness

SOURCES

[1] NASA Assets Asteroid Vesta (https://assets.science.nasa.gov/dynamicimage/assets/science/psd/solar/internal_resources/4898/Asteroid_Vesta-1.jpeg?w=800&h=702&fit=clip&crop=faces%2Cfocalpoint , last visited on October 5th,2025)

[2] NASA Planetary Defense (https://science.nasa.gov/blogs/planetary-defense/2025/02/24/latest-calculations-conclude-asteroid-2024-yr4-now-poses-no-significant-threat-to-earth-in-2032-and-beyond/ , last visited on October 5th,2025)

[3] ESA Space Environment Report 2025 (https://www.esa.int/Space_Safety/Space_Debris/ESA_Space_Environment_Report_2025 , last visited on October 5th,2025)

[4] Annual number of objects launched into space (https://ourworldindata.org/grapher/yearly-number-of-objects-launched-into-outer-space , last visited on October 5th,2025)

[5] NASA Impact of Spaceflight on Earth's Atmosphere: Climate, Ozone, and the Upper Atmosphere (https://ntrs.nasa.gov/api/citations/20240013276/downloads/NASA-TM-20240013276-V6.pdf , last visited on October 5th,2025)